

THIN GLASS COMPOSITE PANELS: INVESTIGATION OF THE ADHESIVE JOINT BETWEEN 3D-PRINTED POLYMER CORE AND GLASS

ABSTRACT:

Thin glass is the most favoured substrate material for displays and devices. But also, it enables new applications in architecture for example in glass façades. Due to its high strength and small thickness (0.1 - 2 mm) thin glass is very flexible, lightweight and easily bendable. However, thin glass cannot simply replace conventional façade glazing. To avoid too high deformations of the glazing as a result of the high flexibility it has to be stiffened. An appropriate solution is the use of sandwich panels consisting of two thin glass panes with an inner polymer

core. In order to maintain the lightweight of these façade elements, 3D-printed polymer structures should be used instead of a solid core. The present study is dedicated to find a suitable adhesive to bond the polymer core to the thin glass. The mechanical and thermomechanical performances of different combinations of typical 3D-printed polymers and transparent adhesives were evaluated. In addition, the influences of temperature and UV aging were investigated as well as the compatibility of the polymers and the adhesives.